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Human KCC2 polypeptide and DNA sequences

(Mount, D.B. and Song, L. (2002) Brain Res. Mol. Brain Res. 103 (1-2), 91-105; ACCESSION : AF208159)

Human KCC2 polypeptide (SEQ ID NO:2) :

MPNNLTDCEDGDGGANPGDGNPKESSPFINSTDTEKGKEYDGKN

MALFEEEMDTSPMVSSLLSGLANYTNLPQGSREHEEAENNEGGKKKPVQAPRMGTFMG

VYLPCLQNIFGVILFLRLTWVVGIAGIMESFCMVFICCSCTMLTAISMSAIATNGVVP

AGGSYYMISRSLGPEFGGAVGLCFYLGTTFAGAMYILGTIEILLAYLFPAMAIFKAED

ASGEAAAMLNNMRVYGTCVLTCMATVVFVGVKYVNKFALVFLGCVILSILAIYAGVIK

SAFDPPNFPICLLGNRTLSRHGFDVCAKLAWEGNETVTTRLWGLFCSSRFLNATCDEY

FTRNNVTEIQGIPGAASGLIKENLWSSYLTKGVIVERSGMTSVGLADGTPIDMDHPYV

FSDMTSYFTLLVGIYFPSVTGIMAGSNRSGDLRDAQKSIPTGTILAIATTSAVYISSV

VLFGACIEGVVLRDKFGEAVNGNLVVGTLAWPSPWVIVIGSFFSTCGAGLQSLTGAPR

LLQAISRDGIVPFLQVFGHGKANGEPTWALLLTACICEIGILIASLDEVAPILSMFFL

MCYMFVNLACAVQTLLRTPNWRPRFRYYHWTLSFLGMSLCLAIMFICSWYYALVAMLI

AGLIYKYIEYRGAEKEWGDGIRGLSLSAARYALLRLEEGPPHTKNWRPQLLVLVRVDQ

DQNVVHPQLLSLTSQLKAGKGLTIVGSVLEGTFLENHPQAQRAEESIRRLMEAEKVKG

FCQVVISSNLRDGVSHLIQSGGLGGLQHNTVLVGWPRNWRQKEDHQTWRNFIELVRET

TAGHLALLVTKNVSMFPGNPERFSEGSIDVWWIVHDGGMLMLLPFLLRHHKVWRKCKM

RIFTVAQMDDNSIQMKKDLTTFLYHLRITAEVEVVEMHESDISAYTYEKTLVMEQRSQ

ILKQMHLTKNEREREIQSITDESRGSIRRKNPANTRLRLNVPEETAGDSEEKPEEEVQ

LIHDQSAPSCPSSSPSPGEEPEGEGETDPEKVHLTWTKDKSVAEKNKGPSPVSSEGIK

DFFSMKPEWENLNQSNVRRMHTAVRLNEVIVKKSRDAKLVLLNMPGPPRNRNGDENYM

EFLEVLTEHLDRVMLVRGGGREVITIYS

Human KCC2 DNA (SEQ ID NO:1):

```
   1 atgcccaaca acctgacgga ctgcgaggac ggcgatgggg gagccaaccc gggtgatggc
  61 aaccccaagg aaagcagtcc cttcatcaac agcaccgaca cagagaaggg aaaggagtat
 121 gatggcaaga acatggcctt gtttgaggag gagatggaca ccagccctat ggtgtcctcc
 181 ttgctcagtg gcctggccaa ctacaccaac ctgccccagg gaagtaggga gcatgaagag
 241 gcagaaaaca atgagggtgg aaaaaagaag ccggtgcagg ccccacgcat gggcaccttc
 301 atgggcgtgt acctgccgtg cctgcagaac atctttggcg tcatcctctt cctgcggctc
 361 acctgggtgg tgggcattgc aggcatcatg gagtccttct gcatggtgtt catctgctgc
```

FIG. 9A

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```
 421 tcctgtacga tgctcacggc catctccatg agtgcaattg caacgaatgg tgttgtgcct
 481 gctggtggct cctactacat gatttccagg tctctgggcc cagagtttgg gggtgccgtg
 541 ggcctctgct tctacctggg cactaccttt gcaggagcca tgtacatcct gggcaccatc
 601 gaaatcctgc tggcttacct cttcccagcc atggccatct tcaaggcaga agatgccagt
 661 ggggaggcag cagccatgct gaacaacatg cgtgtttacg gcacctgtgt gctcacctgc
 721 atggccactg tggtgtttgt gggtgtcaag tatgtcaaca agtttgccct tgtcttcctg
 781 ggttgtgtca tcctctccat cctggccatc tatgctgggg tcatcaagtc tgccttcgac
 841 ccacccaact tcccgatctg cctcctgggt aaccgcacgc tgtctcgcca tggctttgat
 901 gtctgtgcca agctggcttg ggaaggaaat gagacggtga ccacacggct atggggcctt
 961 ttctgctcct ctcgcttcct caacgccacc tgtgatgaat acttcacccg aaacaatgtc
1021 acagagatcc agggcatccc tggtgctgcc agtggcctca tcaaagagaa cctctggagc
1081 tcctacctga ccaagggcgt gattgtggag aggagtggga tgacctcggt gggcctggcc
1141 gatggcactc ctatcgacat ggaccaccct tatgtcttca gtgatatgac ctcctacttc
1201 accctgctgg ttggcatcta cttcccctca gtcacaggga tcatggctgg ttctaaccgc
1261 tctggggacc tgagggatgc ccagaagtca atccccactg gcaccatcct ggccatcgcc
1321 accacctctg ctgtctacat cagctccgtt gttctgtttg gggcctgcat tgagggggtc
1381 gtcctgcggg acaagtttgg cgaagctgtg aatggcaacc tcgtggtggg cactctggcc
1441 tggccatctc catgggtaat tgtcatcgga tccttcttct ccacctgtgg ggctgggctg
1501 cagagcctca cgggggcccc acgcctgctg caggccatct cgagggatgg cattgtgccc
1561 ttcctgcagg tctttggcca tggcaaggcc aatggagagc cgacctgggc cctgctcctg
1621 actgcctgca tctgcgagat tggcatcctc attgcatccc tcgacgaggt ggcccccatc
1681 ctctctatgt tcttcctgat gtgctacatg tttgtgaatc tggcctgtgc agtgcagacg
1741 ctgctgagga cacccaactg gaggccacgc tttcgatatt accactggac cctctccttc
1801 ctgggcatga gcctctgcct ggccctcatg ttcatctgct cctggtatta tgcactggta
1861 gccatgctca ttgctggact catctacaag tacattgagt accgtggggc agagaaggag
1921 tggggcgatg ggatacgagg tctgtctctc agtgcggctc gctatgccct cttacgcctg
1981 gaggaagggc ccccacacac caagaactgg aggccacagc tgctggtgct ggtgcgtgtg
2041 gaccaagacc agaatgtggt gcacccccag ctgctctcac tgacctccca gctgaaggca
2101 gggaagggcc tgaccatcgt gggctctgtc cttgagggca cctttctgga aaatcatcca
2161 caggcccagc gggcagaaga gtctatcagg cgcctgatgg aggcagagaa ggtgaagggc
2221 ttctgccagg tggtgatctc ctccaacttg cgtgatggcg tgtcccatct gatccagtcc
2281 gggggcctcg gggggctgca gcacaacact gtgcttgttg gctggccccg caactggcgc
2341 cagaaggaag atcatcagac gtggaggaac ttcattgagc tggtccggga aaccacagct
2401 ggccacttag ccctgctggt caccaagaac gtttccatgt ttcctgggaa ccctgagcgc
2461 ttctctgagg gcagcatcga cgtttggtgg attgtgcacg atggaggcat gctcatgctg
2521 ctgcccttcc tgctgcggca ccacaaggtc tggcggaagt gcaagatgcg tatcttcact
2581 gtggcccaga tggatgacaa tagcatccag atgaagaagg atctgaccac atttctgtat
2641 catttacgca tcactgcgga ggtcgaggtg gtggagatgc atgagagcga catctcagct
2701 tacacctatg agaagacgtt ggtgatggag cagcgttccc agatcctcaa acagatgcat
2761 ttaaccaaga atgagcggga gcgggagatc cagagtatca cagatgagtc acgaggctca
2821 atccggagaa agaatccagc caacacgcgg ctccgcctga acgtcccaga agagacggct
2881 ggtgacagtg aagagaagcc agaggaggag gtgcagctga tccacgatca gagtgctccc
2941 agctgcccca gcagctcccc gtccccaggg gaggagcctg agggggaagg ggagacagat
3001 ccggagaagg tgcatctcac ctggaccaag gacaagtcgg tggcagagaa gaataagggc
3061 cccagtcctg tctcctctga gggcatcaag gacttcttca gcatgaagcc ggagtgggag
3121 aacttgaacc agtccaacgt gcggcgcatg cacacggccg tgcggctgaa cgaggtcatc
3181 gtgaagaaat cccgggacgc caagcttgtt ttgctcaaca tgcctgggcc tccccgcaac
3241 cgcaatggtg atgaaaacta catggagttt ctcgaggtcc tcacagagca cctggaccgg
3301 gtgatgctgg tccgcggtgg tggccgagag gtcatcacca tctactcctg agaaccaggt
3361 cctgccaccc gggcccgagc gcgcccggcc cgcggctccg gagccctcgc cgcgcccccc
3421 gccgctgtca ccgtttacat acagaccctg tgcccgtgtc ctggcccctt accccgctgc
3481 ctgaagcccg gaggccacgc ctgttggggc tgattcggag agggcgcccc gccgcgcaga
3541 gaccagagct cctcagtgcc agtttggccc ctgggtcttc gctgcccttt ttctaagccc
3601 ggcctcgtct cgccggagga gacgctgcaa taaaggttgg gagaaggcgc ggaaaggaga
3661 ggagctgggg ccttggggac ccccaggtag tccatgcggc ccattcctcc ccttcccact
3721 cccgccgcgg tcctcgctct gcgctcctcc ggcgctgctc cctggctccc ggcggcccgg
3781 aggcccgcgg ggtgggaagg ccgcgcttgc cgtctccgcc gccccttctc gccgagccgt
3841 ggggcgcggg cggccgagcc tatacatagt gtacaggaga catcgcgtgt atttttaacg
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FIG. 9B

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3901 tccccatatt tatgtgacta gaagcgcaac agacttctcg ccatagtcga gctctcccgc
3961 tgggggcact gcggggaggc gaggcctcgg gaagctgaat tttccttgac gtccaagagt
4021 ttgagagcga aagtgcttta ggcccaggcg ggggtcgtgg cctcgttccc tcgacacctc
4081 cgtcctgctc tcgcctcttc gccctttccg cgcgcccttg gcttcccacc ctcctctcca
4141 gtccttttcc gagatgaggt gagacaaggg tccaactttt cctggattcg cctcccagcg
4201 gacgtgagct tccactgcgg ctgcagagac gcgagcaacc tcttctcatc ggctcttatg
4261 caagttgggg ccaggatagg ggaggggtgc tcctcaagag gaagaaaccg agaggcccgc
4321 gccccaccga ggaagccccg ccccggtgcc ttcgctgggg agcaggcgtc tctcctcagt
4381 cggcttgtcg cctgctcccc gtatcccatg gctcctcgcc aaagactgaa attgtggagc
4441 tggagggcgc cccctccccg gagtttcctc cctgggacaa gtgagggagg agggggccga
4501 ttctggttta ggggccggac ccactgagag gccccagagc cgcccgtgat gttcctcccc
4561 cgtccccatc tggcagctcc tgtctcgcct gagggaccca gccgccttct ccgtgctctg
4621 gggccgggcc tcgctgctta gcagcggcct ctagctccgt ctcccgggga cctgggcctg
4681 agggagggct ggagtcagca cgcgctttgt ccttagcgcc tgtctgctct cctctaacta
4741 ggacccaggg cctttggctt ccccagctca tccttggccc ttccgctcca ccagcctggt
4801 ctgaggcgtg ctctgtcctt agagaaggcg cggtggccgg gttcccttcc cctagggcac
4861 attactaagg gggtcaggca ctgcatgctc gttccagcac catctgggac tgggtacagt
4921 acctccagcc ccagggccct gacctgcgca cctagcttga catctcacgc acctcccaga
4981 gctggcgcca ctgagtaatc cggacctcac cacctctttt cctttgagcc caaggcagag
5041 ctagagctgg agctggcgcc acccagacag cgtcaggtgt ggctggggta ggtttggagg
5101 tctgccagtt acgccaagtc ccctctgaga ttcgatcagg ggactggata gattctttca
5161 ggtactcaat caggaagctg gaggtgttag acaccagccc cctgcatcct tcagtagacc
5221 tccctctgaa caccacagcc aggtcctgcc ttctgggggc ctgaatattc cagagctgat
5281 gtgatgggct gtgcagaagg gggctgtatc aacatcaatt agggaaccaa agttgcacta
5341 tctgggccca gattgtctgg ttggcaagag caaagtttcc gttgatgaaa cagacatccc
5401 acaacaaaaa cccaagtttt ctgtgctaca tgtgcaatat ttgttatgaa tgttatcaca
5461 agtcattcat caagttatct ttataatcac tgtagttaga tgtttcatgt ccattcaagt
5521 gacttttatt ctgagtgcaa tatttcaata gccttgtagt gataactagt gttgcttttg
5581 tttagatgat ctatgtgcag ggcaatgcaa tgaagttgaa acccccttggt aataggagag
5641 gttgcaaacc aaatcaagag tatttattac tattactgct attattatta ggcctgcctt
5701 taattttcag tgtaagtgtt cagtatgccg catcctgcct cagtattgat cttgtgttct
5761 ttgtgccaat atgaaaagga gagggttggt tctttccttt attgttgaat gctcccattt
5821 aatgctttat ggcttttact gtattacttt tttagactcc cgtctgcaca aaatgcaata
5881 aaaataattt tattataaaa aaaaaaa
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FIG. 9C

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Mouse KCC2 (K-Cl cotransporter [Slc12a5]) polypeptide and DNA sequence

(Ehringer, M.A., et al. (2001) Mamm. Genome 12 (8), 657-663; ACCESSION: AF332064)

Mouse KCC2 polypeptide (SEQ ID NO:4) :

MLNNLTDCEDGDGGANPGDGNPKESSPFINSTDTEKGREYDGRN

MALFEEEMDTSPMVSSLLSGLANYTNLPQGSREHEEAENNEGGKKKPVQAPRMGTFMG

VYLPCLQNIFGVILFLRLTWVVGIAGIMESFCMVFICCSCTMLTAISMSAIATNGVVP

AGGSYYMISRSLGPEFGGAVGLCFYLGTTFAGAMYILGTIEILLAYLFPAMAIFKAED

ASGEAAAMLNNMRVYGTCVLTCMATVVFVGVKYVNKFALVFLGCVILSILAIYAGVIK

SAFDPPNFPICLLGNRTLSRHGFDVCAKLAWEGNETVTTRLWGLFCSSRLLNATCDEY

FTRNNVTEIQGIPGAASGLIKENLWSSYLTKGVIVERRGMPSVGLADGTPVDMDHPYV

FSDMTSYFTLLVGIYFPSVTGIMAGSNRSGDLRDAQKSIPTGTILAIATTSAVYISSV

VLFGACIEGVVLRDKFGEAVNGNLVVGTLAWPSPWVIVIGSFFSTCGAGLQSLTGAPR

LLQAISRDGIVPFLQVFGHGKANGEPTWALLLTACICEIGILIASLDEVAPILSMFFL

MCYMFVNLACAVQTLLRTPNWRPRFRYYHWTLSFLGMSLCLALMFICSWYYALVAMLI

AGLIYKYIEYRGAEKEWGDGIRGLSLSAARYALLRLEEGPPHTKNWRPQLLVLVRVDQ

DQNVVHPQLLSLTSQLKAGKGLTIVGSVLEGTFLDNHPQAQRAEESIRRLMEAEKVKG

FCQVVISSNLRDGVSHLIQSGGLGGLQHNTVLVGWPRNWRQKEDHQTWRNFIELVRET

TAGHLALLVTKNVSMFPGNPERFSEGSIDVWWIVHDGGMLMLLPFLLRHHKVWRKCKM

RIFTVAQMDDNSIQMKKDLTTFLYHLRITAEVEVVEMHESDISAYTYEKTLVMEQRSQ

ILKQMHLTKNERENEIQSITDESRGSIRRKNPANPRLRLNVPEETACDNEEKPEEEVQ

LIHDQSAPSCPSSSPSPGEEPEGERETDPEVHLTWTKDKSVAEKNKGPSPVSSEGIKD

FFSMKPEWENLNQSNVRRMHTAVRLNEVIVNKSRDAKLVLLNMPGPPRNRNGDENYME

FLEVLTEQLDRVMLVRGGGREVITIYS

Mouse KCC2 DNA (SEQ ID NO:3) :

```
   1 gagcaagcga gcgagcggag aaggcgggca gaggggcgcg ggcgaagcgg cgcagccatc
  61 ccgagcccgg cgccgcgcag ccaccatgct caacaacctg acggactgcg aggacggcga
 121 tgggggagcc aaccccggtg atggcaaccc caaagagagc agtcccttca tcaacagcac
 181 ggacacggag aagggcagag agtacgatgg caggaacatg gccctgtttg aggaggagat
 241 ggacaccagc cccatggtat cctccctgct cagtgggctg gccaactaca ccaacctacc
 301 ccagggaagt agagagcatg aagaagcaga aaataatgag ggtggaaaaa agaagccggt
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FIG. 10A

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 361 gcaggctcct cgaatgggca ccttcatggg tgtgtacctg ccgtgcctgc agaacatctt
 421 tggtgtcatc ctcttcctgc ggctcacgtg ggtggtgggc atcgcgggca tcatggagtc
 481 cttctgtatg gtcttcattt gctgctcctg tacgatgctc acagccattt ccatgagtgc
 541 aatcgcaacc aatggtgttg tgcctgctgg tggctcgtac tacatgattt ccaggtctct
 601 gggcccggag tttgggggcg ccgtgggcct ctgcttctac ctgggcacca cctttgctgg
 661 ggctatgtac atccttggca cgatcgagat cctgctggct tatctcttcc cagctatggc
 721 catcttcaag gcagaagatg ccagtgggga ggcggccgcc atgctgaaca acatgcgggt
 781 gtatggcacc tgtgtgctca cctgcatggc caccgttgtc tttgtgggtg tcaagtacgt
 841 caacaagttt gccttggtct tcctgggttg cgtcatcctg tccatcctgg ccatctatgc
 901 aggggtcatc aagtctgcct tcgacccacc caatttcccg atctgcctcc tggggaaccg
 961 cacgctgtct cgccatggct ttgatgtctg tgccaagctg gcttgggaag gaaatgagac
1021 agtgaccaca cggctctggg gccttttctg ctcctcccgc ctcctcaatg ccacctgtga
1081 tgagtacttc acccgaaaca atgtcacaga gatccagggc attcctggtg ctgccagtgg
1141 tctcatcaaa gagaacctgt ggagttctta cctgaccaaa ggggtgattg tcgagaggcg
1201 tgggatgccc tctgtgggcc tggcagacgg taccccgta gacatggacc acccctatgt
1261 cttcagtgat atgacctcct acttcaccct gctcgttggt atctacttcc cctcagtcac
1321 agggatcatg gctggctcaa accgatctgg agacctgcgg gatgcccaga agtctatccc
1381 tactggaact atcctggcca ttgctaccac ctctgctgtc tacatcagct ctgttgttct
1441 gtttggagcc tgcatcgagg gggtcgtctt acgggacaag tttggggaag ctgtgaatgg
1501 caacttggtg gtgggcaccc tggcctggcc ttctccctgg gtcatcgtca taggctcttt
1561 cttctctacc tgtggggctg gattacagag cctcacaggg gccccacgtc tgctgcaggc
1621 catctcccgg gatggcatag tgcccttcct gcaggtcttt ggccatggca aagctaatgg
1681 agagccaacc tgggcgctgc tgctgactgc ctgcatctgt gagatcggca tcctcatagc
1741 ctccctggat gaggtcgccc ctatactttc catgttcttc ctaatgtgtt acatgtttgt
1801 gaacttggct tgtgcggtgc agacgctgct gaggacaccc aactggaggc cacgatttcg
1861 ctattaccac tggactctct ccttcctggg catgagcctc tgcctggccc tcatgttcat
1921 ttgctcctgg tactacgcac tggtggccat gctcattgcc ggactcattt ataagtacat
1981 cgagtaccgg ggggcggaga aggagtgggg ggatggaatc cgaggcctgt ctctcagtgc
2041 agcacgctat gctctcttgc gcctggagga aggacctccg catacgaaga actggaggcc
2101 ccagctgctg gtgctggtgc gtgtggacca ggatcagaac gtggtgcatc cgcagctgct
2161 ctccctgacc tcccagctca aggcagggaa gggcctgacc attgtgggct ccgtccttga
2221 gggcaccttt ctggacaacc atccacaggc tcagcgggca gaggagtcta tcaggcgcct
2281 gatggaggct gagaaggtga agggcttctg ccaggtagtg atctcctcca acctgcgtga
2341 tggtgtgtcc cacctgatcc agtctggggg cctcggggga ttgcaacaca ataccgtgct
2401 ggtgggctgg cctcgcaact ggaggcagaa ggaggatcat cagacatgga ggaacttcat
2461 cgaactggtc cgggaaacta cagccggcca cctcgccctg ctggtcacca agaatgtttc
2521 catgtttccc gggaaccctg agcgcttctc ggagggcagc attgacgtgt ggtggattgt
2581 gcacgacggg ggcatgctca tgctgctgcc cttcctgctg cgacaccaca aggtctggag
2641 gaaatgcaaa atgcggatct tcaccgtggc ccagatggac gataacagta tccagatgaa
2701 gaaggacctg accacgtttc tgtaccactt acgcattact gcagaggtgg aggtggtgga
2761 gatgcatgag agcgacatct cggcatacac ctacgagaag acattagtaa tggagcaacg
2821 atctcagatc ctcaaacaga tgcacctcac caagaacgag cgggaacggg agatccagag
2881 catcacagac gagtctcggg gctccattcg gaggaagaat ccagccaacc cccggctccg
2941 cctcaatgtt cccgaagaga cagcgtgtga caatgaggag aagccagagg aggaggtgca
3001 gctgatccat gaccagagtg ctcccagctg ccctagcagc tcgccatctc caggggagga
3061 gcccgagggg gagagggaga cagacccaga ggtgcatctt acctggacca aggataagtc
3121 agtggcagag aagaataaag gccccagtcc cgtctcctcc gagggcatca aggacttctt
3181 cagcatgaag ccggagtggg aaaacttgaa ccagtccaat gtacggcgca tgcacacagc
3241 tgtgcggctg aacgaggtca tcgtgaataa atctcgggat gccaagctag ttttgctcaa
3301 catgcccggg cctccccgca accgcaatgg ggatgaaaac tacatggaat tcttggaggt
3361 cctcactgag caactggacc gggtgatgct ggtccgcggt ggcggccgag aggtcatcac
3421 catctactcc tgaaggccag gacctgccac tccggcccga gcgcgcccgg cccgcggccc
3481 ccagagccct cgccgcgcct ccccgccgct gtcaccgttt acataagacc cagttgccca
3541 tgccctggcc cctttccttc ccgctgcctg cagccctgag gccttgcccg tcggggctga
3601 cccgcagggc ggcccgtgag gccccttttc tgagcctggc ctcgccccgc cggagc
```

FIG. 10B

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Rat KCC2 polypeptide and DNA sequences

(Payne, J.A., et al., (1996) J. Biol. Chem. 271 (27), 16245-16252; Gillen, C.M., et al., (1996) J. Biol. Chem. 271 (27), 16237-16244; ACCESSION: U55816)

Rat KCC2 polypeptide (SEQ ID NO:6) :

MLNNLTDCEDGDGGANPGDGNPKESSPFINSTDTEKGREYDGRN

MALFEEEMDTSPMVSSLLSGLANYTNLPQGSKEHEEAENNEGGKKKPVQAPRMGTFMG

VYLPCLQNIFGVILFLRLTWVVGIAGIMESFCMVFICCSCTMLTAISMSAIATNGVVP

AGGSYYMISRSLGPEFGGAVGLCFYLGTTFAGAMYILGTIEILLAYLFPAMAIFKAED

ASGEAAAMLNNMRVYGTCVLTCMATVVFVGVKYVNKFALVFLGCVILSILAIYAGVIK

SAFDPPNFPICLLGNRTLSRHGFDVCAKLAWEGNETVTTRLWGLFCSSRLLNATCDEY

FTRNNVTEIQGIPGAASGLIKENLWSSYLTKGVIVERRGMPSVGLADGTPVDMDHPYV

FSDMTSYFTLLVGIYFPSVTGIMAGSNRSGDLRDAQKSIPTGTILAIATTSAVYISSV

VLFGACIEGVVLRDKFGEAVNGNLVVGTLAWPSPWVIVIGSFFSTCGAGLQSLTGAPR

LLQAISRDGIVPFLQVFGHGKANGEPTWALLLTACICEIGILIASLDEVAPILSMFFL

MCYMFVNLACAVQTLLRTPNWRPRFRYYHWTLSFLGMSLCLALMFICSWYYALVAMLI

AGLIYKYIEYRGAEKEWGDGIRGLSLSAARYALLRLEEGPPHTKNWRPQLLVLVRVDQ

DQNVVHPQLLSLTSQLKAGKGLTIVGSVLEGTFLDNHPQAQRAEESIRRLMEAEKVKG

FCQVVISSNLRDGVSHLIQSGGLGGLQHNTVLVGWPRNWRQKEDHQTWRNFIELVRET

TAGHLALLVTKNVSMFPGNPERFSEGSIDVWWIVHDGGMLMLLPFLLRHHKVWRKCKM

RIFTVAQMDDNSIQMKKDLTTFLYHLRITAEVEVVEMHESDISAYTYEKTLVMEQRSQ

ILKQMHLTKNEREREIQSITDESRGSIRRKNPANTRLRLNVPEETACDNEEKPEEEVQ

LIHDQSAPSCPSSSPSPGEEPEGEGETDPEKVHLTWTKDKSAAQKNKGPSPVSSEGIK

DFFSMKPEWENLNQSNVRRMHTAVRLNEVIVNKSRDAKLVLLNMPGPPRNRNGDENYM

EFLEVLTEQLDRVMLVRGGGREVITIYS

Rat KCC2 DNA (SEQ ID NO:5) :

```
  1 ccgctccacg gagagcaagc gacagagctc gagcaagcga gcgagcggcg aaggcgggca
 61 gaggggcgcg ggcgaagagg cgcagccatc ccgagcccgg cgccgcgcag ccaccatgct
121 caacaacctg acggactgcg aggacggcga tgggggagcc aacccgggtg acggcaatcc
181 caaggagagc agcccccttca tcaacagcac ggacacggag aaggggagag agtatgatgg
241 caggaacatg gccctgtttg aggaggagat ggacaccagc cccatggtat cctccctgct
```

FIG. 11A

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```
 301 cagtgggctg gccaactaca ccaacctgcc tcagggaagc aaagagcacg aagaagcaga
 361 aaacaatgag ggcggaaaga agaagccggt gcaggcccca cgcatgggca ccttcatggg
 421 cgtgtacctc ccgtgcctgc agaacatctt tggtgttatc ctctttctgc ggctcacttg
 481 ggtggtggga atcgcaggca tcatggagtc cttctgcatg gtcttcatct gctgctcctg
 541 cacgatgctc acagccattt ccatgagcgc aattgcaacc aatggtgttg tgcctgctgg
 601 tggctcctac tacatgattt ccaggtctct gggcccggag tttgggggcg ccgtgggcct
 661 ctgcttctac ctgggcacta cctttgctgg ggctatgtac atcctgggca ccatcgagat
 721 cctgctggct tacctcttcc cagcgatggc catcttcaag gcagaagatg ccagtgggga
 781 ggcagccgcc atgttgaata acatgcgggt gtatggcacc tgtgtgctca cctgcatggc
 841 caccgtagtc tttgtgggcg tcaagtacgt gaacaagttt gccctggtct tcctgggttg
 901 cgtgatcctc tccatcctgg ccatctacgc aggggtcatc aagtctgcct tcgatccacc
 961 caatttcccg atttgcctcc tggggaaccg cacgctgtct cgccatggct ttgatgtctg
1021 tgccaagctg gcttgggaag gaaatgagac agtgaccaca cggctctggg gcctattctg
1081 ttcctcccgc ctcctcaatg ccacctgtga tgagtacttc acccgaaaca atgtcacaga
1141 gatccagggc attcctggtg ctgcaagtgg cctcatcaaa gagaacctgt ggagttccta
1201 cctgaccaag ggggtgatcg tggagaggcg tgggatgccc tctgtgggcc tggcagatgg
1261 taccccccgtt gacatggacc acccctatgt cttcagtgat atgacctcct acttcaccct
1321 gcttgttggc atctatttcc cctcagtcac agggatcatg gctggctcga accggtccgg
1381 agacctgcgg gatgcccaga agtctatccc tactggaact atcttggcca ttgctacgac
1441 ctctgctgtc tacatcagct ctgttgttct gttcggagcc tgcatcgaag gggtcgtcct
1501 acgggacaag tttggggaag ctgtgaatgg caatctggtg gtgggcaccc tggcctggcc
1561 ttctccttgg gtcattgtca taggctcttt cttctctacc tgcggagctg gactacagag
1621 cctcacaggg gccccacgcc tgctgcaggc catctcccgg gatggcatag tgcccttcct
1681 gcaggtcttt ggccatggca aagccaacgg agagccaacc tgggcgctgc tgctgactgc
1741 ctgcatctgt gagatcggca tcctcatcgc ctccctggat gaggtcgccc ctatcctttc
1801 catgttcttc ctgatgtgtt acatgtttgt gaacttggct tgcgcggtgc agacactgct
1861 gaggacgccc aactggaggc cacgcttccg atattaccac tggaccctct ccttcctggg
1921 catgagcctc tgcctggccc tgatgttcat ttgctcctgg tattatgcgc tggtagctat
1981 gctcatcgct ggcctcatct ataagtacat cgagtaccgg ggggcagaga aggagtgggg
2041 ggatgggatc cgaggcctgt ctctcagtgc agctcgctat gctctcttgc gtctggagga
2101 aggacccccg catacaaaga actggaggcc ccagctactg gtgctggtgc gtgtggacca
2161 ggaccagaac gtggtgcacc cgcagctgct gtccttgacc tcccagctca aggcagggaa
2221 gggcctgacc attgtgggct ctgtccttga gggcaccttt ctggacaacc accctcaggc
2281 tcagcgggca gaggagtcta tccggcgcct gatggaggct gagaaggtga agggcttctg
2341 ccaggtagtg atctcctcca acctgcgtga cggtgtgtcc cacctgatcc aatccggggg
2401 cctcgggggc ctgcaacaca acactgtgct agtgggctgg cctcgcaact ggcgacagaa
2461 ggaggatcat cagacatgga ggaacttcat cgaactcgtc cgggaaacta cagctggcca
2521 cctcgccctg ctggtcacca agaatgtttc catgttcccc gggaaccctg agcgtttctc
2581 tgagggcagc attgacgtgt ggtggatcgt gcacgacggg ggcatgctca tgctgttgcc
2641 cttcctcctg cgtcaccaca aggtctggag gaaatgcaaa atgcggatct tcaccgtggc
2701 gcagatggat gacaacagca ttcagatgaa gaaagacctg accacgtttc tgtaccactt
2761 acgaattact gcagaggtgg aagtcgtgga gatgcacgag agcgacatct cagcatacac
2821 ctacgagaag acattggtaa tggaacaacg ttctcagatc ctcaaacaga tgcacctcac
2881 caagaacgag cgggaacggg agatccagag catcacagat gaatctcggg gctccattcg
2941 gaggaagaat ccagccaaca ctcggctccg cctcaatgtt cccgaagaga cagcttgtga
3001 caacgaggag aagccagaag aggaggtgca gctgatccat gaccagagtg ctcccagctg
3061 ccctagcagc tcgccgtctc caggggagga gcctgagggg gaggggggaga cagacccaga
3121 gaaggtgcat ctcacctgga ccaaggataa gtcagcggct cagaagaaca aaggccccag
3181 tcccgtctcc tcggagggga tcaaggactt cttcagcatg aagccggagt gggaaaactt
3241 gaaccagtcc aacgtgcggc gcatgcacac agctgtgcgg ctgaacgagg tcatcgtgaa
3301 taaatcccgg gatgccaagt tggtgttgct caacatgccc gggcctcccc gcaaccgcaa
3361 tggagatgaa aactacatgg aattcctgga ggtcctcact gagcaactgg accgggtgat
3421 gctggtccgc ggtggtggcc gagaggtcat caccatctac tcctgaaggc caggacctgc
3481 cactccggcc cgagcgagcc cggcccgcgg ccccggagcc ctcgccgcgc ctccccgccg
3541 ctgtcaccgt ttacataaga ccccgttgcc cgtgccctgg ccctcttccc tcccgctgcc
3601 tgcggcccgg aggccttgcc cgtcggggct gacccggagg gcggcccgtg ggccccttt
3661 ctgagcccgg cctcgccctg ccggagtaga cgttgcaata aaggtggcga ggcggcgtgg
3721 agaggagcgg aaccgtggtc ccgggccggg gagccccgag cccgtccctc cccacgcccc
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FIG. 11B

Replacement Sheet

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3781 gccgcgctcc ccccggaccc tggtcgctga gcccgggcgc cgctcggctg cgctatacat
3841 agtgtacagg agacatcgag tgtattttta atgtccccat atttctgtaa actagaaacg
3901 caacggactc ctcgccacgg ccgcgctctc cccgctgcgg gcgcccagga aggcggagac
3961 ccgggaagcc agggttccct gcgctcccga gctgagagcc aagtgcttta aggccggcgc
4021 tctcctttcc ctttcctgtc cacggcccgg gcttccctct cttccctcca gttcttggcg
4081 aacacaggtg aagccctgcc cggtgccttc gtggaggagc aggcgtctct cctctgttgg
4141 cttgccgcct gctccccctg tcccgtggct cctcgccaaa gactgaattt gtggagctgg
4201 agggcacacc ctccccactt tccttcctgg gacaggtgag gggccaatgc cagtctaggg
4261 gccgactcac aggaggcctc gcgcagcctc ttggtcccca ctctgcaagt cctgcctggg
4321 gacccagccc ccctggtggt tctggggcgg agctttgctg cctagcagca agtccttagt
4381 tactgtctcc agataccagg acctggagta gggaatggag tcatatgggt tcagttgttc
4441 ctggcgcttc tctgcccccc gctccccctc tccccctctc gtaggacaca aggactttgg
4501 ctttcttaac tcatccttgg cgcttccgct ccaccacgcc cacctgtggg gaggagccct
4561 cagccctaga gaggcgtttg gctggttccc ttcccccagg gcacgttact aagaggacag
4621 gcactgcatg ctcctttaag cgccctctgg gactgggtac agtgcctcca gccccagggc
4681 cctggtctgc gcacctagtt agacatcatt gcccactcca gggccagggc cactagctga
4741 cctcaccacc tttttccttg agcccaaggc agagagagct gcagctggtg ccatctagac
4801 aggctcaagt gtggccagtg gcagggctcg agggccactg ccctgttgct tggctcagga
4861 cctctctgag atttgatggg gactggatat tcttccaggt agtagccatc aagtcggaag
4921 tgttggaccc aggacctgac attccttcaa gactgccctc ccttgctgtg gttttgcctt
4981 ttggggcaag agaggggctg ggcaaacggg gaggaggcag tatcaacacc gattagggaa
5041 ccaaagttgc actacctggg cccagcctct ggttggcaag agcaaagttt ctgttgatga
5101 aaacaaacag cccacaacaa caccccccgc cccgttttct gtgctccatg tgcaatattt
5161 gttatgaacc ttgtgtcgtt caagtcacct ttataatcac tgtagctaga tgttccatgt
5221 ccatccaggt gactttactc tgagtgcaat atttcaatag cctggtagtg agaagagtgt
5281 tgcttttgtt tcagccgacc tatgtgcagg gcaatgcaat gcagtccaaa acccttgtaa
5341 ataggagagg ttgcaagcca aatcaagagt atttatcgtt attactatta ttattaggcc
5401 tgcctttaat tttagtgttt cggtatttcg catcctgcct cggtattgat cgtgtgttct
5461 ctgtgccaat atgcaaagga gaggatcagt tctttccttt actgttgaat gctcccattt
5521 actgctttaa ggcttttact gtgttcattt tttagatacc tgtctg
```

FIG. 11C